CLAIMS

What is claimed is:

1. A sludge harvester for removing a concentrated nutrient sludge from sludge ponds, comprising:

a frame;

one or more wheels or skids attached to said frame;

means for gently breaking up at least a portion of a sludge layer adjacent to a dilute layer; and

means for capturing at least a portion of a broken up sludge layer.

2. A sludge harvester as recited in claim 1, wherein said frame includes a flat bed.

3. A sludge harvester as recited in claim 2, wherein said flat bed includes a plurality of sideboards designed so as to reduce at least one of vortexing, turbulence, and mixing.

4. A sludge harvester as recited in claim 1, wherein said means for gently breaking up at least a portion of a sludge layer comprises a pin mixer.

5. A sludge harvester as recited in claim 1, wherein said means for gently breaking up at least a portion of a sludge layer comprises an auger.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

6. A sludge harvester as recited in claim 1, wherein said means for gently breaking up at least a portion of a sludge layer comprises a rake.

7. A sludge harvester as recited in claim 1, wherein said means for capturing at least a portion of a broken up sludge layer comprises a pump.

8. A sludge harvester as recited in claim 7, wherein said pump is designed so as to pump about 200 gallons per minute or less during use.

9. A sludge harvester as recited in claim 7, wherein said pump is designed so as to pump about 150 gallons per minute or less during use.

10. A sludge harvester as recited in claim 7, wherein said pump is designed so as to pump about 100 gallons per minute or less during use.

11. A sludge harvester as recited in claim 1, wherein the sludge harvester is designed so as to be self-propelled.

12. A sludge harvester as recited in claim 1, further comprising at least one of a tow rope, a chain, or a cable for pulling the sludge harvester through a sludge pond during use.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

13. A sludge harvester for removing a concentrated nutrient sludge from sludge ponds, comprising:

a frame;

one or more wheels or skids attached to said frame;

at least one of a pin mixer, auger or rake designed and positioned so as to break up at least a portion of a sludge layer adjacent to a dilute layer when the sludge harvester is in use; and

at least one pump designed and positioned so as to capture at least a portion of a broken up sludge layer.

14. A sludge harvester as recited in claim 13, wherein said pump is designed so as to pump a volume in a range of about 50 to about 150 gallons per minute during use.

15. A sludge harvester as recited in claim 13, wherein said frame includes a flat bed and a plurality of sideboards designed so as to reduce at least one of vortexing, turbulence, and mixing.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111

16. A method of removing a concentrated nutrient sludge from a sludge pond, comprising:

providing a sludge harvester as recited in claim 1;

introducing said sludge harvester into a sludge pond having a dilute layer and a sludge layer; and

operating said sludge harvester so as to recover an organic sludge product comprising a portion of the sludge layer.

17. A method as recited in claim 16, wherein said recovered organic sludge product has a high concentration of soluble nutrients.

18. A method as recited in claim 16, wherein operation of said harvester is at least partially automated.

19. A method as recited in claim 16, further comprising removing water from said organic sludge product to yield a wet or dry organic fertilizer product.

20. A method as recited in claim 16, further comprising applying said organic sludge product onto agricultural land.

WORKMAN NYDEGGER
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
1000 EAGLE GATE TOWER
60 EAST SOUTH TEMPLE
SALT LAKE CITY, UTAH 84111